REMARKS

In view of the following remarks, the Examiner is respectfully requested to withdraw the rejections and allow 7-26 and 44-51, the only claims pending and currently under examination in this application.

With respect to the priority claim discussed on page 2 of the Office Action, it is noted that a Renewed Petition was filed on August 31, 2004.

The rejection of Claims 7-26 and 44-51 under 35 U.S.C. § 103(a) as being obvious Wang in view of Bensimon has been maintained.

As reviewed in the Applicants' prior response, a feature of the pending claims is the step of "**converting said olefin functional groups to ligand reactive functional groups** that produce covalent bonds with said at least two different polymer ligands upon contact with said ligands..." As such, the claimed methods include a step of converting the olefin functional groups to ligand reactive functional groups.

The combined teaching of Wang in view of Bensimon specifically teaches away from such a step.

Specifically, at Col. 3, lines 40 to 50, Bensimon states that:

> These highly specific surfaces for biological reactions, contain a support having at the surface groups with a double bond, especially vinyl (-$CH=CH_2$, hereinafter C=C surfaces) which are accessible to the solution. They are capable of directly anchoring molecules of biological interest (DNA, RNA, PNA, proteins, lipids, saccharides) under certain conditions of pH or ionic content of the medium. In particular, these surfaces do not require specific chemical modification either of the surface or of the biological molecules to be anchored. There are no documents mentioning such a use of a surface with vinyl groups.

Accordingly, Bensimon teaches a method in which the olefin functional groups on the surface are reacted directly with the ligands to be attached to the surface, **without any intermediate conversion step**. Furthermore, as this direct linkage ability without an intermediate conversion step is the benefit of using Bensimon's method of using olefin displaying functional groups, Bensimon provides no motivation to one of skill in the art to complicate the method by first changing the olefin group to another moiety.

In maintaining this rejection, the Examiner asserts that "Bensimon et al. do disclose the step of "converting said olefin functional groups to ligand reactive functional groups that produce covalent bonds with said at least two different polymer ligands upon contact with said ligands," and cites to col. 4, lines 15 to 18 and col. 7, lines 26-32.

However, col. 4, lines 15 to 18 read:

> In the second case, the highly specific surface for biological reactions according to the present invention contains: on a support, a substantially monomolecular and compact layer of an organic compound of elongated structure having at least:
> an attachment group having affinity for the support, and
> an exposed group containing an ethylenic double bond, having little or no affinity for the said support and the said attachment group under the attachment conditions, but having affinity for one type of biological molecule.

and col. 7, lines 26-32.

> The present invention also relates to the surfaces obtained using the processes according to the present invention and all processes using this type of surface, whether they are processes permitting the detection and/or the quantification of biological molecules, but also the separation of certain biological molecules, especially a sample using antigen/antibody and/or DNA, DNA/RNA coupling techniques.
>
> The present invention also relates to processes for preparing highly specific surfaces for biological reactions as described above for the production of layers according to (A) and (B) and, in particular, the process characterized in that:

Neither of these passages teaches or suggests a step of **converting olefin functional groups to ligand reactive functional groups.** The Examiner has therefore incorrectly read the teaching of Bensimon, as Bensimon does not teach or even suggest a method that includes converting olefin functional groups to ligand reactive groups.

As such, the combined teaching of the cited references fails to teach or suggest, and in fact teaches away from, the claimed methods which include a step of "converting said olefin functional groups to ligand reactive functional groups that produce covalent bonds with said at least two different polymer ligands upon contact with said ligands..." Accordingly, the rejection of Claims 7-26 and 44-51 under 35 U.S.C. § 103(a) as being obvious Wang in view of Bensimon may be withdrawn.

The rejection of Claims 7-26 and 44-51 under 35 U.S.C. § 103(a) as being obvious Pirrung in view of Bensimon has been maintained.

A reviewed above, a feature of the pending claims is the step of "**converting said olefin functional groups to ligand reactive functional groups** that produce covalent bonds with said at least two different polymer ligands upon contact with said

ligands..." As such, the claimed methods include a step of converting the olefin functional groups to ligand reactive functional groups.

The combined teaching of Pirrung in view of Bensimon specifically teaches away from such a step.

Specifically, at Col. 7, lines 22 to 32, Bensimon states that:

> With an exposed group containing a -CH=CH_2 radical which will be called hereinafter "C=C surface" or "surface with ethylenic bond", a direct anchoring, in particular of DNA or proteins is possible. Within the framework of the present invention, it has been demonstrated that these surfaces have a reactivity which is highly pH-dependent. This characteristic makes it possible to anchor the nucleic acids or the proteins, especially by their end(s), using a determined pH region and often with a reaction rate which can be controlled by the pH.

Accordingly, Bensimon teaches a method in which the olefin functional groups on the surface are reacted directly with the ligands to be attached to the surface, without any intermediate conversion step. Furthermore, as this direct linkage ability without an intermediate conversion step is the benefit of using Bensimon's method of using olefin displaying functional groups, Bensimon provides no motivation to one of skill in the art to complicate the method by first changing the olefin group to another moiety.

In maintaining this rejection, the Examiner asserts that "Bensimon et al. do disclose the step of "converting said olefin functional groups to ligand reactive functional groups that produce covalent bonds with said at least two different polymer ligands upon contact with said ligands," and cites to col. 4, lines 15 to 18 and col. 7, lines 26-32.

However, col. 4, lines 15 to 18 read:

"In the second case, the highly specific surface for biological reactions according to the present invention contains: on a support, a substantially monomolecular and compact layer of an organic compound of elongated structure having at least:
an attachment group having affinity for the support, and
an exposed group containing an ethylenic double bond, having little or no affinity for the said support and the said attachment group under the attachment conditions, but having affinity for one type of biological molecule.

and col. 7, lines 26-32.

"The present invention also relates to the surfaces obtained using the processes according to the present invention and all processes using this type of surface, whether they are processes permitting the detection and/or the quantification of biological molecules, but also the separation of certain biological molecules, especially a sample using antigen/antibody and/or DNA, DNA/RNA coupling techniques.
The present invention also relates to processes for preparing highly specific surfaces for biological reactions as described above for the production of layers according to (A) and (B) and, in particular, the process characterized in that:

Neither of these passages teaches or suggests a step of **converting olefin functional groups to ligand reactive functional groups.** The Examiner has therefore incorrectly read the teaching of Bensimon, as Bensimon does not teach or even suggest a method that includes converting olefin functional groups to ligand reactive groups.

As such, the combined teaching of the cited references fails to teach or suggest, and in fact teaches away from, the claimed methods which include a step of "converting said olefin functional groups to ligand reactive functional groups that produce covalent bonds with said at least two different polymer ligands upon contact

with said ligands..." Accordingly, the rejection of Claims 7-26 and 44-51 under 35 U.S.C. § 103(a) as being obvious Pirrung in view of Bensimon may be withdrawn.

CONCLUSION

The applicant respectfully submits that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone Gordon Stewart at 650 485 2386. The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§ 1.16 and 1.17 which may be required by this paper, or to credit any overpayment, to Deposit Account No. 50-1078.

Respectfully submitted,

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By: _____
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